

REMARKS

In paragraph 1 of the Office Action the prior Restriction Requirement is discussed. Responsive thereto, Applicant affirms its prior non-election of claims 1-10, without traverse.

In paragraph 2 of the Office Action the title is objected to as being not descriptive. Responsive thereto, Applicant has amended the title to read -- Magnetic Head Having Planar Second Magnetic Pole--. Applicant therefore submits that this ground of objection has been satisfied.

In paragraphs 3 and 4 of the Office Action claims 11-18 are rejected under 35 U.S.C. §102(e) as being anticipated by Sasaki, stating:

“Applicant’s attention is respectfully directed to the embodiment of Figs. 15A and 15B which shows all of the claimed features including the feature of the P2 pole including a body portion and P2 pole tip portion being disposed upon said write gap layer 22. Note; for further identification of the structure of Sasaki that reads on the claimed structure, see paragraph 4 of the first office action.”

For ease of comprehension, paragraph 4 of the First Office Action is set forth below. It states:

“See Figs. 8A and 8B. Note; read head element 15, pole 18, pole pedestal 19a, etch stop 20a, induction coil 21, back piece 19b and flat write gap 22.

Further note that the environment for Sasaki’s device is for use in disc drives [col. 1, lines 9-11] having the same structure as indicated in Cl. 15.”

Responsive thereto, Applicant has amended independent claims 11 and 15 to include the limitations related to the induction coil structure that are not taught by Sasaki.

Specifically, a significant difference between the teachings of Sasaki and the present invention is the fabrication of the induction coil structure. In Applicant’s invention the induction coil structure is fabricated utilizing a reactive ion etch (RIE) process which creates particular differences between Applicant’s invention and Sasaki. Particularly, focusing on Figs. 5-10 of the application, an insulation layer 70 is deposited upon the etch stop layer 66. Because an RIE process is utilized to fabricate the induction coil, the insulation layer 70 must be composed of a material that is different from the material of the etch stop layer 66; specifically, the insulation layer 70 must be etchable, whereas the etch stop layer material is not etchable. Thereafter, as depicted in Figs. 6, 7 and 8, an etching mask is fabricated and the induction coil trenches are formed by the RIE process into the insulation layer 70. Subsequently, as depicted in Fig. 9, a seed layer is deposited into the induction coil trenches and the induction coil is electroplated onto

the seed layer within the trenches. Thereafter, as depicted in Figs. 10 and 11, the insulation layer material 70 remains in the device with the induction coil turns formed in it, and the write gap layer 110 is fabricated on top of the induction coil structure.

Turning to Sasaki, it teaches an induction coil structure that differs from that of Applicant's invention. Particularly, with reference to Figs. 3A, B, 4A, B and 5A, B of Sasaki, it is seen (with reference first to Figs. 3A, B) that an insulation layer 20A is deposited upon a P1 pole piece 19A, the P1 pole 18 and the back gap piece 19B. This Fig. 3A is similar to Applicant's Fig. 3. Thereafter, in Figs. 4A, B, Sasaki teaches the fabrication of an induction coil utilizing photolithographic techniques. Specifically, although not depicted in detail in Sasaki, the photolithographic techniques involve the deposition of a photoresist upon the layer 20A, followed by the well known patterning, light exposure and development of the photoresist and the removal of photoresist material to create induction coil trenches (not shown in Sasaki). Thereafter, a seed layer is deposited (not shown) and the induction coils are electroplated into the trenches on top of the seed layer, followed by the removal of all of the photoresist between the induction coil turns. This step of the removal of the photoresist is depicted in Fig. 4A of Sasaki. Thereafter, as depicted in Fig. 5A of Sasaki, a second insulation material is deposited around and filling the induction coil turns, and this is followed by a CMP step depicted in Fig. 5A. Therefore, Sasaki's photolithographic fabrication of the induction coil structure differs from and is more complicated than Applicant's induction coil structure that is fabricated utilizing the RIE process steps.

With regard to the amendments made herein to independent claims 11 and 15, Applicant's RIE process for fabricating the induction coil necessitates that the etch stop layer and the insulation layer be fabricated from different materials. Particularly, that the insulation layer be etchable in an RIE process in which the etch stop layer is not etchable. With regard to Sasaki, it is stated in Sasaki, col. 13, lines 24-40, that the deposited insulation layer is composed of alumina which is the same material as the first deposited insulation layer (alumina). There is no teaching in Sasaki that the two insulation materials (20a and 20b) must be different, as is now recited in the claims.

Therefore, the structural differences between Applicant's invention (as set forth in amended independent claims 1 and 15) and Sasaki, are a result of the different methods employed for the fabrication of the induction coil. Applicant therefore respectfully submits that

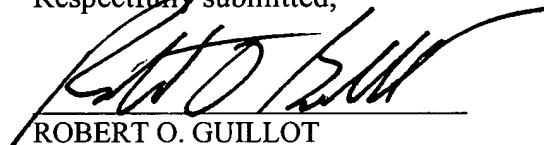
the teachings of Sasaki do not anticipate all of the limitations now set forth in amended independent claims 11 and 15. Applicant therefore submits that independent claims 11 and 15 contain allowable subject matter. With regard to dependent claims 12-14 and 16-18, Applicant submits that these claims are allowable as being dependent from an allowable base claim, either directly or indirectly.

Having responded to all of the paragraphs of the Office Action, and having amended the claims accordingly, Applicant respectfully submits that the Application is now in condition for allowance. Applicant therefore respectfully requests that a Notice of Allowance be forthcoming at the Examiner's earliest opportunity. Should the Examiner have any questions or comments with regard to this amendment, a telephonic conference at the number set forth below is respectfully requested.

Dated: January 21, 2003

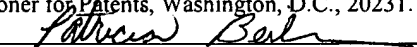
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Respectfully submitted,



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I hereby certify that this paper (along with any referred to as being attached or enclosed) is being filed via facsimile at (703) 746-5568 on January 21, 2003 with Examiner Allen J. Heinz, Commissioner for Patents, Washington, D.C., 20231.
Date: January 21, 2003



Patricia Beilmann

ATTACHMENT A - S/N 09/638,663

MARKED UP VERSION OF AMENDED CLAIMS

1 11. (Twice amended) A magnetic head, comprising:
2 a substrate;
3 read head elements being fabricated upon said substrate;
4 a P1 pole being fabricated upon said read head elements;
5 a P1 pole pedestal being disposed upon said P1 pole in magnetic connection therewith;
6 an etch stop layer being disposed upon said P1 pole;
7 an induction coil structure being fabricated upon said etch stop layer; said induction coil
8 structure including an electrical insulation layer that is disposed upon said etch stop layer,
9 wherein said insulation layer is composed of a different material from said etch stop layer; a
10 plurality of induction coil trenches that are formed within said insulation layer; and induction
11 coil seed layer that is disposed within said induction coil trenches, and a plurality of induction
12 coil turns that are fabricated upon said seed layer within said induction coil trenches;
13 a flat upper surface being formed upon said P1 pedestal and said induction coil structure;
14 a write gap layer being disposed upon said flat upper surface; and
15 a P2 pole, including a body portion and a P2 pole tip portion, being disposed upon said
16 write gap layer.

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OFFICE OF PETITIONS

1 15. (Twice amended) A hard disk drive comprising:
2 a motor for rotating a spindle;
3 a magnetic medium disk mounted on said spindle;
4 an actuator assembly including a magnetic head for writing magnetic information on said
5 disk, said magnetic head including:
6 a substrate;
7 read head elements being fabricated upon said substrate;
8 a P1 pole being fabricated upon said read head elements;
9 a P1 pole pedestal being disposed upon said P1 pole in magnetic connection therewith;
10 an etch stop layer being disposed upon said P1 pole; said induction coil structure
11 including an electrical insulation layer that is disposed upon said etch stop layer, wherein said
12 insulation layer is composed of a different material from said etch stop layer; a plurality of
13 induction coil trenches that are formed within said insulation layer; and induction coil seed layer
14 that is disposed within said induction coil trenches, and a plurality of induction coil turns that are
15 fabricated upon said seed layer within said induction coil trenches;
16 an induction coil structure being fabricated upon said etch stop layer;
17 a flat upper surface being formed upon said P1 pedestal and said induction coil structure;
18 a write gap layer being disposed upon said flat upper surface; and
19 a P2 pole, including a body portion and a P2 pole tip portion, being disposed upon said
20 write gap layer.